**BIOPHYSICS**

1. **DESCRIPTION: Participants will be tested on their knowledge of biology and physics, and their ability to apply physics to biological problems.**

**A TEAM OF UP TO: 2** **APPROXIMATE TIME/EVENT TIME:** **50 minutes**

1. **EVENT PARAMETERS:**
   1. **Each team may bring one 8.5” x 11” sheet of paper that may contain information on both sides in any form and from any source.**
   2. **Each team may bring two stand-alone calculators of any type dedicated to computation to use during the event.**
   3. **The Event Supervisor will provide a physics equation and constants sheet.**

[**https://secure-media.collegeboard.org/digitalServices/pdf/ap/physics-c-tables-and-equations-list.pdf**](https://secure-media.collegeboard.org/digitalServices/pdf/ap/physics-c-tables-and-equations-list.pdf)

1. **THE COMPETITION:**
   1. **This event will test participants’ knowledge of biology and physics.**
   2. **Biology topics may include but are not limited to:**
      1. **Animal and plant physiology**
      2. **Molecular and cell biology**
      3. **Biotechnology**
   3. **Physics topics may include but are not limited to:**
      1. **Mechanics**
      2. **Fluids**
      3. **Electricity and magnetism**
2. **SAMPLE TASKS/STATIONS/QUESTIONS**:
   1. **Consider a blood transfusion via IV catheter. Given pressure, viscosity, length, and target flow rate, determine the radius of the catheter required.**
   2. **If the fluid were Ringer’s lactate solution instead of blood, by how much would the flow rate be increased or decreased? Ringer’s lactate solution is 4 times less viscous than blood.**
3. **SCORING:**
   1. **The highest score wins. All questions will be assigned a predetermined number of points.**
   2. **Selected questions will be used to break ties.**
   3. **Time will not be a tie breaker.**
4. **RECOMMENDED RESOURCES:** 
   1. **Campbell Biology**
   2. **Hyperphysics (**[**http://hyperphysics.phy-astr.gsu.edu/hbase/index.html**](http://hyperphysics.phy-astr.gsu.edu/hbase/index.html)**)**